represented by symbols that obey the laws that Maxwell has shown should be the laws of symbols representing the condition of a medium that would explain electric and magnetic phenomena. It seems very unlikely that any jelly is at all *like* the ether that Maxwell supposes. It seems much more likely that what he called "electric displacements" are changes in structure of the elements of the ether, and not actual displacements of the elements. He guards against this being supposed a necessary part of his theory when he defines polarisation in terms that certainly require a change of structure rather than a change of position, so that I think the word "displacement" was unfortunately chosen. I also think that Sir Wm. Thomson, notwithstanding his guarded statements on the subject, is lending his overwhelming authority to a view of the ether which is not justified by our present knowledge and which may lead to the same unfortunate results in delaying the progress of science as arose from Sir Isaac Newton's equally guarded advocacy of the corpuscular theory of optics. GEO. FRAS. FITZGERALD

40, Trinity College, April 25

The April Meteors

IN 1882 the Lyrid meteor shower (epoch, April 19-20) was noticed to be far more conspicuous than usual. The display had been quiescent for some years; it appeared to have degenerated into a third rate shower, scarcely deserving the trouble of observation. But in the year mentioned the stream gave distinct intimation of greater intensity, and showed the necessity of continuing annual observations of periodical showers such as this, even though they may exhibit, during a comparatively long interval, but a very feeble sustenance of the richness recorded in former times.

On April 20, 1882, Mr. Corder, at Chelmsford, watching for three hours between dusk and 12h. 30m., counted 26 Lyrids and 8 meteors belonging to other contemporary radiants of minor character. He regarded the horary rate of apparition on that occasion as about two or three times as high as on any other occasion since 1877, when he had been able to watch for the display. He found the radiant at 268° + 37°, and remarked that four of the meteors seen were as brilliant as first-magnitude stars, but he had never found them a very interesting species in respect to their visible appearances.

No observations of the shower were obtained in 1883, the moon being near the full at the time of its occurrence; but in 1884 the conditions were more favourable. On the night of April 19, in the hour preceding midnight, 17 Lyrids were observed by the writer at Bristol. During the last quarter of an hour of the watch the sky was much clouded, and only one Lyrid seen. The horary number was computed as 22 for one observer—evidently, therefore, the display of 1884 was a notable one, and it was very unfortunate that a clouded sky prevented the development of the shower being watched through the morning hours of April 20, when possibly it may have attained a richness without parallel in late years. On the evening of April 20 it had evidently become exhausted, for in a watch of twenty minutes not a single shooting-star appeared, though the sky was very clear.

The present return of the Lyrids occurred under very auspicious circumstances. The moon offered no impediment to morning observations, which is far the best time to watch for these meteors, as the radiant, west of α Lyræ, is very low in the evening hours. The nights of April 17, 18, 19, and 20 were cloudless throughout, and on the three latter dates observations were made here with the following results:—

Date		Period h. m. h. m.		Duration of Watch Hours		Meteors seen		Lyrids seen		Radiant Point ° °
April 18	...	12 0 to 14 30	...	2¼	...	16	...	6	...	260 + 33½ [1]
„ 19	...	10 30 to 14 0	...	3¼	...	26	...	10	...	267½ + 33 [2]
„ 20	...	11 30 to 15 30	...	4	...	39	...	14	...	274 + 33½ [3]
Ap. 18-20	...	10 30 to 15 30	...	9½	...	81	...	30	...	267·2 + 33·3

After April 20 moonlight and cloudy weather effectually prevented further work.

The table furnishes us with some interesting facts. It shows that during the three nights the proportion of Lyrids to unconformable meteors was very nearly the same, namely, as 3 to 5, and that the horary rate of their apparition was little more than 3. It also shows a very marked displacement of the radiant (in the direction of east longitude) from night to night. I regard this as the most interesting and certain feature observed. The three centres resulting from the paths of short meteors, observed with the utmost care, may each be relied on as very accurate. It therefore appears most conclusive that the radiant point of the Lyrids, similar to that of the August Perseids, increases in right ascension from night to night, and the extent of this displacement is even greater for the Lyrids than for the Perseids.

On April 19, 1884, 11½h., I found the radiant at 269° + 33°, and on April 19, 1885, 12¼h. (the middle time of the observation), at 267½° + 33°. Allowing for the difference (about 12′) in the sun's longitude at the two epochs in applying the correction for the displacement of the radiant (7° of R.A. daily) observed this year, we shall find that the two positions are in *exact* agreement.

The recent display has been decidedly meagre in point of numbers. There is a great falling off since last year, when the horary rate was nearly eight times as great. But some of the meteors observed this year were very bright and in a great measure compensated for their scanty apparitions. It is curious that three of the most brilliant Lyrids, equal to or exceeding Jupiter, appeared in nearly the same region of the western boundaries of Virgo. On April 18, at 12h. 57m., one of these fell, with a bright flash and streak, 10° east of Spica Virginis. Another on April 20, at 13h. 14m., came out very suddenly 7° above that star; and a third, at 14h. 1m., descended, with a swift, diving motion, about 13° east of the star, so that the path was nearly similar to that of the first of the three. These five meteors gave transient flashes of yellowish-white light, which brightly illumined the mist lying along the horizon, and left short streaks of very brief duration. I saw four other Lyrids, quite equal to first-magnitude stars, and these, together with the fainter members of the same shower, were nearly all registered amongst the stars surrounding Lyra, especially those of Hercules, Draco, and Aquila. Altogether I regard the April display of this year as one of considerable importance, for though much less rich than in 1884, it furnished meteors of greater interest and brilliancy. The low position of the radiant during observations last year may have influenced the visible aspect of the meteors from Lyra, especially as regards the swift, flashing characteristic so invariably noticed this year in the brighter members, or, possibly, the explanation may be that near the richer portion of the stream the corpuscles are smaller in almost the same ratio as the increased condensation. It will be advisable to regard this question during future observations of this shower, and especially the new feature detected this year as to the evident shifting of the radiant point from night to night. I believe the maximum of the shower is usually attained with the radiant at 269½° + 33° (the radiant point of its allied Comet I. 1861 is 270½° + 32°). If the display extends over as long as seven days, and the radiant shifts 7° in R.A. every day, it is curious that the meteors will be *Herculids* on April 17, 18, and 19, *Lyrids* on April 20, 21, 22, and 23, and then *Cygnids* on April 24.

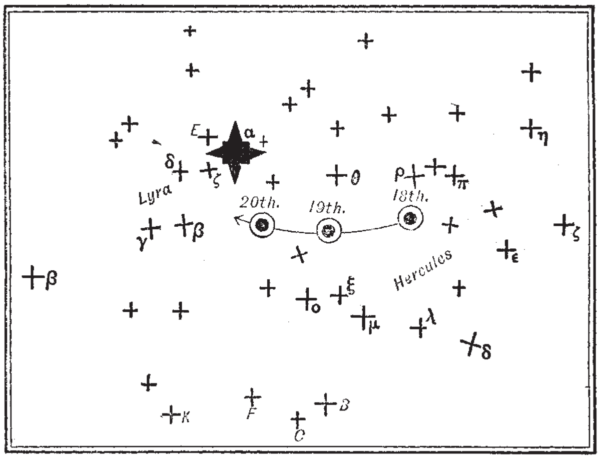

Diagram exhibiting the displacement in the radiant point amongst the stars of Hercules and Lyra on the nights of April 18, 19, and 20, 1885.

Contemporary with the special periodical display of this epoch there are vast numbers of feeble systems which annually give

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[1] Sky clear; slight haze. [2] *Ib.* [3] Sky very clear.

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some indication of their presence. This year I ascertained the positions of several of these showers with great care. The number of meteors from them averaged from 3 to 5 only, but the paths intersect nearly at a point in the individual cases, so that the centres are entitled to the same value as positions resulting from a large number of tracks. I give the best of these co-Lyrid showers, and the nearest confirmations from previous observations :—

Observed 1885	Previous Observations	Authority
April 18 ... 181° + 35¼°	... 184° + 35°	... March 31-April 12, D.S., 1872.
19 ... 236 + 62	... 240 + 55	... April 14, Schiaparelli and Zezioli.
20 ... 226 + 41	... 223 + 40	... March 12-April 30, Greg and Herschel.
18-20 ... 296 ± 0	... 294 ± 0	... April 16-19, 1877, D.
19-20 ... 230 + 17	... 230 + 26	... April 20-24, Heis.
18-20 ... 299 + 24	... 298 + 25	... April 16-19, 1877, D.
	300 + 20	... April-May, Corder.
18-20 ... 213 + 9	... 206 + 13	... April 13-May 11, Heis.
18-20 ... 226 ± 0	... 228 − 2	... April 16-19, 1877, D.

The two radiants observed here in 1877 and 1885, with mean position at 295° ± 0° and 298°·5 + 24°·5, are very interesting. The former, just preceding η Aquilæ on the equator, supplies meteors of very great velocity, the latter in Vulpecula gives swift, streak-leaving meteors. This pair of showers, directed from points near the apex of the earth's way, are now, I believe, very exactly determined in regard to their centres of radiation. That they have hitherto evaded frequent detection is not surprising, as they only become well visible in the morning hours. It will be useful to watch for these special streams during future exhibitions of the Lyrids, as well as to note the several other interesting features closely associated with this well-known display.
W. F. DENNING

Chinese Insect Wax

THE beetle alluded to in connection with this subject in the last number of NATURE (vol. xxxi. p. 615) is a probably undescribed species of *Brachytarsus*, a genus of the family *Anthribidæ*, allied to the *Curculionidæ*. Through the courtesy of the authorities at Kew I have had specimens before me. The idea that it acts as a sort of midwife to assist at the birth of infant *Coccidæ* is quite erroneous. The genus *Brachytarsus* is a true parasite on *Coccus*, and its habits, in this connection, in Europe, have long been known. It is of course interesting to find "unity of habit" prevailing in the case of *Coccus Pé-la*, even to its parasite; but with regard to the latter there is nothing new; some points in the general economy of the wax insect, in the notes published, are of far greater importance.

Lewisham, May 1 R. MCLACHLAN

The New Bird in Natal

THERE can be little doubt from the description given by Mr. Turnbull in your issue of April 16 (p. 554) that the bird lately obtained by him in Natal is the Standard-winged Nightjar, *Cosmetornis* (seu *Macrodipteryx*) *vexillarius*, Gould. It has not been met with in Cape Colony, which accounts for Mr. Turnbull's inability to find mention of it in Layard's "Birds of South Africa;" but in Mr. Sharpe's new edition of Layard's work (which Mr. Turnbull would do well to procure) he will find an account of this bird given at p. 89. It appears to have a wide geographical range, being found both on the west and east coasts of Africa; in Angola and Damaraland, in Natal, on the Zambesi (where 300 miles up the river Dr. Kirk found it quite common), in the islands of Bourbon and Madagascar, along the Red Sea shore, and on the island of Socotra. With this extended range it is somewhat remarkable that it has not yet been met with in Cape Colony. According to the observations of Dr. Kirk the singular prolongations of the primaries are peculiar to the males, and a seasonal peculiarity observed only during the months from October until January. The habits of this bird, like those of other nightjars, are crepuscular. An excellent coloured figure of the male is given in Gould's "Icones Avium."
J. E. HARTING

Wild Bees

A FEW words respecting a colony of wild bees (a species of *Andrena*) which I have just discovered in our garden, may interest your entomological readers. A day or two ago, on walking beside a low-turfed mound which supports two trees on one of our towns, I noticed that the grassy surface on the south—therefore the sunny—side was covered with little hillocks of earth, such as ants throw up after rain. On examination each little heap showed the circular hole which denotes a bee's nest, and the bees themselves were seen in many places going in and out. Some holes were level with the ground, but most had the tiny mound of soil cast up in the process of excavation. The peculiarity of the case seems to me to lie in the great number of nests forming a complete colony. It is difficult to count them, but there cannot be less than eighty or ninety in an area—roughly calculated—of about sixty square feet. Have any of your readers noticed a similar city of these busy people? and can any one supply the specific name? E. BROWN

Further Barton, Cirencester, May 2

ON M. WOLF'S MODIFICATION OF FOUCAULT'S APPARATUS FOR THE MEASUREMENT OF THE VELOCITY OF LIGHT

NO one who has the true interests of scientific accuracy at heart can fail to welcome any innovation whereby the elements of a research may be varied, for thereby the ever-lurking constant error is most readily eliminated. It seems, therefore, that this in itself is sufficient reason for the interesting paper communicated by M. Wolf to the Académie des Sciences (*Comptes Rendus*, 9 Février), describing a very ingenious arrangement of Foucault's experiment, and that there was no occasion for disparaging other work in order to justify its publication. It is to be hoped that this was done rather through inadvertence than design, but I feel called upon to correct some of the misapprehensions under which the author labours, and particularly those concerning the appearance and distinctions of the image of the slit in my work on the velocity of light.

M. Wolf remarks that, under the conditions which I selected, this image, even under the most favourable circumstances, must be bordered with very large diffraction fringes, which the atmospheric disturbances transform into a badly-defined "*tache lumineuse*." In reply to this, though I grant that the fringes *ought* to be present, yet I can affirm as a matter of fact that they were not to be seen. Possibly M. Wolf and others may have been somewhat misled by a drawing of the appearance of the image given in my work (p. 124, *Astr. Papers*, *American Ephemeris*, and *Nautical Almanac*, vol. i. Part 3) where the image proper, which is quite clear, is surrounded by a luminous haze, from which, however, it is very easily distinguished.

I hardly think that if M. Wolf had given the "specimen observations" (p. 133 of my work) due consideration, he would have characterised as a "*tache lumineuse*" an image whose position was measured with the following results (each result is the mean of ten observations made by one observer, and recorded without divulging the result by another):—

No. 1	... 112·801 mm.	... 0·020 mm.
,, 2	... 112·773 ,,	... 0·006 ,,
,, 3	... 112·769 ,,	... 0·010 ,,
,, 4	... 112·772 ,,	... 0·007 ,,
,, 5	... 112·779 ,,	... 0·000 ,,

Average difference from mean = 0·0086 ,,

These are measurements of the *deflected* image, so that the differences are not merely errors of linear measurement, but include errors in the estimate of the speed of the revolving mirror.

Now, M. Wolf, in his most sanguine statement, does not hope for a greater degree of accuracy than one part in 3500 in this particular measurement, whereas the above results are on the average closer than one part in 10,000.

But let us examine the data on which he bases this

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